

HD
1751
A49

THE AGRICULTURAL • SITUATION •

OCTOBER 1944

A Brief Summary of Economic Conditions

Issued Monthly by the Bureau of Agricultural Economics, United States Department of Agriculture
Subscription price, 50 cents per year; single copy, 5 cents; foreign price, 70 cents; payable in cash or money
order to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

VOLUME 28 - NUMBER 10 - WASHINGTON, D. C.



IN THIS ISSUE

	Page
Commodity Reviews.....	2
Penicillin Production and Agriculture.....	O. E. May 9
Post-War Outlook for Wheat.....	Robert E. Post 11
Farm Land Market After the War.....	Mark M. Regan 13
Nutritive Value of Cottonseed Protein.....	D. Breese Jones 16
Do Larger Farms Pay Higher Wages?.....	Louis J. Ducoff 17
What Do Farmers Expect After the War?..	Arthur Raper and U. T. Summers 20

FOR THE THIRD successive year the Nation's corn crop will exceed 3 billion bushels, with this year's prospective crop of 3.2 billion bushels setting an all-time record despite a late wet spring and prolonged, dry weather last summer in eastern corn-producing areas. Bumper crops of wheat, grain sorghums and possibly rice, as well as corn, are likely to make this year's total tonnage of all grains at least equal the record 155 million tons produced in 1942. * * * Production of commercial truck crops for fresh market this year will exceed the previous high of 1942 by about 11 percent. The prospective 1.8 billion-pound tobacco crop approaches the previous high of 1939, while record crops of fruits, peanuts and tree nuts are likely. * * * Because of the unprecedented high yield of 285 pounds per acre, cotton production this season is estimated at nearly 12 million bales even though the acreage is the smallest since 1895. * * * The 1945 acreage goals for wheat of 68.6 million acres, or rye of 2.5 million and for dry peas of 450,000 acres total some 71.6 million acres, and are above the 69.8 acres actually planted in 1944 but below the 73.3-acre average in 1937-41 for these three crops. * * * Cash marketing receipts from farm products during the first 9 months of 1944 are now estimated at 13.8 billion dollars, 6 percent above a year ago and double the 1938-42 average for these months.

Commodity Reviews

FARM EXPENSES

FARM production expenses are calculated each year primarily to obtain estimates of the annual net income from current operations of farm operators. Net income is derived by subtracting total expenses from gross farm income which is the sum of cash receipts from marketings, Government payments, the value of products consumed on the farm where produced, and the rental value of the farm dwelling.

Separate estimates are made for more than 30 major categories of farm expenses each year. In 1943 four categories accounted for about 40 percent of total expenses: (1) livestock purchases (cattle, calves, sheep, lambs, hogs) (2) feed purchases, (3) fertilizer and lime, and (4) cost of operating motortrucks, tractors, and automobiles for business use. Part of the expense of automobile operation is allocated to the farm family rather than to the farm business and, accordingly, this part is excluded from farm production costs.

Expenses for fertilizer and lime include the value of amounts distributed by the Agricultural Adjustment Agency and the Tennessee Valley Authority as well as purchases from commercial firms. A substantial part of the Government payments included in gross farm income represents payments made to farmers for performing certain approved practices requiring outlays for fertilizer, lime, and other supplies. Thus some of the outlay for fertilizer and lime on the expense side of the farm ledger cancels out a portion of the Government payments on the income side.

Total current operating expenses, which include about 20 miscellaneous items, in addition to the four major categories of expense listed above, accounted for just one-half of the total production costs of farm operators in 1943. Typical of these miscella-

neous expenses are: (1) seed, (2) containers, (3) short term interest, (4) dairy and hardware supplies, (5) ginning, and (6) fire, windstorm and hail insurance.

The other major categories of production expense, accounting for one-half of total costs in 1943, are: (1) depreciation of farm buildings, motor vehicles and machinery; (2) farm wages; (3) taxes on real and personal property; (4) farm mortgage interest; and (5) net rent to landlords not living on farms.

Because of the durability of most farm equipment, such as buildings and machinery, and the wide variation in purchases from year to year, depreciation is believed to be a better measure of cost than the actual purchases in that year. Yearly depreciation charges are computed in such a way

Production Expenses and Net Income of Farm Operators, 1943

Item	Amount	Percent of total
	Mil. Dol.	Percent
Production expenses:		
Current operating expenses:		
Feed purchased.....	2,262	21.2
Livestock purchased.....	732	6.8
Fertilizer and lime.....	425	4.0
Cost of operating motor vehicles.....	724	6.8
Miscellaneous.....	1,203	11.2
Total.....	5,346	50.0
Maintenance or depreciation:		
Buildings.....	690	6.5
Motor vehicles.....	378	3.5
Machinery and equipment.....	374	3.5
Total.....	1,442	13.5
Hired labor.....	1,933	18.1
Taxes.....	448	4.2
Farm mortgage interest.....	271	2.5
Rent to landlords not on farms.....	1,252	11.7
Total production expenses.....	10,692	100.0
Cash receipts from marketings.....	19,362	84.6
Government payments.....	1,672	3.0
Nonmoney income.....	2,814	12.4
Gross income.....	22,738	100.0
Production expenses.....	10,692	47.0
Realized net income from current operations.....	12,046	53.0

¹ Includes \$75 million in Government payments to nonfarm landlords.

NOV 1 1918

as to approximate the amount that farmers would have had to pay each year if they had replaced, at prices prevailing during the year, the amount of equipment that was used up in the year. The amount spent on actual purchases during each year is also estimated, for the purpose of arriving at the value of the inventory of buildings and machinery subject to depreciation each year.

An excess of purchases over depreciation charges in any year represents a net addition to the farmers' wealth in the form of various types of farm equipment. But an excess of depreciation charges over purchases indicates that farmers have delayed the replacement of equipment and have used up a part of their capital invested in machinery.

Farm wages include cash wages, plus the value of board, lodging and other perquisites furnished to farm laborers, whether living on or off farms. The nonmoney items—perquisites—are included in the production expenses of farm operators because the value of these perquisites such as home-grown food, are included in gross income.

Net rent to landlords not living on farms represents the gross rent to such landlords minus the expenses incurred by the landlords in connection with their farm property. These expenses, such as taxes and building repairs, are included in the appropriate categories of production expense. Rent to landlords living on farms is not included in farm expenses because, while such rent represents expense to one farmer, it is an item of income to another. The net rent to nonfarm landlords includes a small amount of Government payments although it is unusual to find such payments on the expense side of the ledger. This is done because total Government payments, whether to persons on farms or to nonfarm landlords, are included in gross income from farming. The portion accruing to nonfarm landlords must properly be taken out in getting the net income of farm operators.

To estimate the net cash available to persons on farms after farm operating expenses subtract cash expenses from cash income. Cash income is the sum of receipts from marketings and Government payments. Cash expenses are computed from the same list of expenses just described except that actual outlays on buildings and machinery are substituted for the depreciation items, and cash wages to farm laborers not living on farms replace total farm wages. Net cash available to persons on farms, however, is not *net income* because it takes no account of the income which may have been used for improving farm property nor what the farm furnishes for living. The value of home-grown products consumed and the rental value of farm dwellings represent a very significant portion of the income of many farm operators.

At the present time estimates of farm production expenses and of the net income of farm operators from current operations are available only for the United States as a whole.

DEMAND

THE PRESENT high level of demand for farm products will continue as long as the war lasts, but a few months after the end of hostilities in Europe will see a substantial decline in industrial production and a significant drop in nonagricultural income payments received by individuals.

However, cessation of hostilities in Europe is not likely to be followed very soon by a drop in the demand for farm products comparable to the decline in domestic business activity. Civilian demand probably will be maintained at a high level in spite of a decline in nonagricultural income. Individual savings have increased during the war to several times their prewar level. Consequently, consumer expenditures could be maintained at their present level with somewhat smaller incomes by reducing the

amount currently saved. The need for food and other farm products by foreign countries will help to maintain agricultural exports for a year or more at levels higher than in pre-war years.

COTTON

PROSPECTS of an early peace in Europe have differing effects on cotton prices in the United States and in certain foreign countries. In Brazil, for example, the end of the European war would seem to hasten the day when the accumulated stocks of Brazilian cotton can move freely into international trade. In the United States, on the other hand, an early peace would appear to lead to widespread cancellation of military contracts for textiles, while providing no offsetting assurance that American cotton will be exported in larger volume.

Between August 18 and September 22, Brazilian cotton prices, Type 5, at Sao Paulo, advanced 1.32 cents, while Middling 15/16-inch cotton in the United States (10 markets) declined 62 points. Even so, on the latter date, Brazilian cotton was only 14.57 cents per pound, or more than 6.59 cents below essentially comparable American cotton.

The competitive position of American cotton is materially improved by the Surplus Disposal Bill which provides for export sales of American cotton at competitive world prices.

FATS AND OILS

WORLD demand for fats and oils in 1945 and 1946 is expected to be strong in relation to available supplies. This demand will tend to support prices of fats, oils, and oilseeds in the United States at levels higher than pre-war in relation to prices of most other agricultural products. Throughout the 1944-45 season, prices of soybeans, flaxseed, cot-

Index Numbers of Prices Received and Paid by Farmers

[1910-14=100]

Year and month	Prices received	Prices paid, interest and taxes	Parity ratio ¹
1943			
January.....	181	156	116
February.....	184	158	116
March.....	192	159	121
April.....	197	160	123
May.....	194	162	120
June.....	195	163	120
July.....	193	164	118
August.....	192	164	117
September.....	193	164	118
October.....	194	165	118
November.....	194	166	117
December.....	196	167	117
1944			
January.....	196	168	117
February.....	195	169	115
March.....	196	169	116
April.....	196	169	116
May.....	194	169	115
June.....	193	170	114
July.....	192	170	113
August.....	193	170	114
September.....	192	170	113

¹ Ratio of prices received by farmers to prices paid, interest, and taxes.

tonseed, peanuts, and tung nuts, and prices of the corresponding oils, will be supported at or near ceiling levels through arrangements between Commodity Credit Corporation and processors.

With continued improvement during September in the condition of the cotton crop, the indicated production of cottonseed this year is now 4,953,000 tons, somewhat more than in 1943, despite a 7-percent reduction in cotton acreage this year.

On the basis of the October 1 condition of major oil crops, prospects are good for an output of domestic edible vegetable oils in 1944-45 about as large as in 1943-44. Lard production, however, will be much smaller than in 1943-44, and reductions are expected in output of linseed oil from domestic flaxseed and in production of greases. The total United States supply of fats and oils in 1944-45, including imports and stocks at the beginning of the season, may be around 700 million pounds less than in 1943-44.

FEED

IMPROVEMENT in many crops as a result of favorable August and September weather, particularly in much of those areas which had suffered from lack of adequate moisture earlier in the season, made feed prospects more favorable on October 1 than a month earlier. The outlook is for a new record corn crop, supplies of which normally account for about 60 percent of the total annual feed concentrate requirements of the nation's livestock. Grain sorghum production will far surpass that of any other year, oats production is indicated to be about 4 percent larger than in 1943, but barley production is down about 11 percent from 1943.

Total supplies of feed grains for the 1944-45 feeding year probably will be about the same as the 1943-44 supply, but slightly larger than the 5-year (1938-42) average. The 1944-

45 supply of feed grains per animal unit on farms next January may be 13 to 15 percent larger than in 1943-44, and about the same as the 5-year (1938-42) average, when reserves were being accumulated.

If feeding rates during the 1944-45 feeding year are about the same as in the 1938-42 period, feed grain reserves could be increased moderately above the 11 million tons at the end of the 1943-44 year. The quantity of wheat and rye fed to livestock in 1944-45 probably will be considerably smaller than the record volume fed in 1943-44. The supply of byproduct feeds for 1944-45 may be slightly larger per animal unit on farms than in 1943-44, although a smaller actual production is in prospect.

On the basis of October 1 crop and production prospects, the combined supplies of all feed concentrates—feed grains, wheat and rye for feed, oilcake and meal, animal byproduct feeds, and other mill byproduct feeds—may

Prices of Farm Products

Estimates of average prices received by farmers at local farm markets based on reports to the Bureau of Agricultural Economics. Average of reports covering the United States weighted according to relative importance of district and State.

	5-year average		Sept. 1943	Aug. 1944	Sept. 1944	Parity price Sept. 1944
	August 1909-July 1914	January 1935-De- cember 1939				
Wheat (bushel).....dollars..	0.884	0.837	1.30	1.35	1.35	1.50
Corn (bushel).....do.....	.642	.691	1.09	1.170	1.16	1.09
Oats (bushel).....do.....	.399	.340	.696	.708	.642	.678
Rice (bushel).....do.....	.813	.742	1.63	1.71	1.60	1.38
Cotton (pound).....cents..	12.4	10.29	20.20	20.15	21.02	21.08
Potatoes (bushel).....dollars..	.697	.717	1.34	1.59	1.47	1.23
Hay (ton).....do.....	11.87	8.87	12.90	14.30	14.70	20.20
Soybeans (bushel).....do.....	2.96	.954	1.69	1.90	1.93	1.63
Peanuts (pound).....cents..	4.8	3.55	7.15	7.64	7.51	8.16
Apples (bushel).....dollars..	.96	.90	2.20	2.12	2.06	1.63
Oranges, on tree, per box.....	1.81	1.11	2.80	3.01	2.90	1.99
Hogs (hundredweight).....do.....	7.27	8.38	14.10	13.50	13.60	12.40
Beef cattle (hundredweight).....do.....	5.42	6.56	11.70	11.70	11.60	9.21
Veal calves (hundredweight).....do.....	6.75	7.80	13.40	12.90	12.90	11.50
Lambs (hundredweight).....do.....	5.88	7.79	12.50	12.30	12.10	10.00
Butterfat (pound).....cents..	28.3	29.1	50.4	50.2	50.2	44.4
Milk, wholesale (100 pounds).....dollars..	1.60	1.81	3.24	3.21	3.26	2.80
Chickens (pounds).....cents..	11.4	14.9	25.2	24.1	23.7	19.4
Eggs (dozen).....do.....	21.5	21.7	41.6	33.0	35.5	40.3
Wool (pound).....do.....	18.3	23.8	40.8	41.7	41.0	31.1

¹ Revised.

² Comparable base price, August 1909-July 1914.

³ Comparable price computed under sec. 3 (b) Price Control Act.

⁴ Comparable base price, August 1919-July 1929.

⁵ Does not include dairy production payments made directly to farmers by county AAA Offices.

⁶ Adjusted for seasonality.

⁷ Preliminary.

be slightly below the 1943-44 supply in total tonnage, but on a per animal unit basis probably will be moderately larger than in 1943-44.

Hay supplies for 1944-45 will be slightly smaller than last year. Supplies are indicated to be as large as or larger than last year in the West North Central and Western States, but smaller in other regions of the country.

**United States Feed Balance, 1937-44,
Year Beginning October**
(In million tons)

Item	1937-41 average	1943 ¹	1944 ¹
SUPPLY			
Stocks, beginning crop year ²	17.1	16.7	11.0
Feed grain production:			
Corn	72.3	86.1	89.5
Oats	18.1	18.3	19.1
Barley	6.8	7.7	6.9
Grain sorghums	2.2	2.9	4.2
Total production	99.4	115.0	119.7
Imported grains, domestic wheat and rye fed	4.5	15.6	8.1
Byproduct feeds	15.5	18.7	18.3
Total supply	130.5	166.0	157.1
UTILIZATION			
Feed grains fed (including imports)	85.1	106.1	-----
Wheat and rye fed (including imports)	4.4	13.6	-----
Byproduct feeds fed	15.5	18.7	-----
Total fed	105.0	138.4	-----
Feed grains for food, seed, industry, and export	12.2	13.0	-----
Total utilization	117.2	151.4	-----
Total utilization adjusted to crop year basis	116.4	154.0	-----
Stocks, end crop year ²	20.1	11.0	-----
Number of grain-consuming animal units on the following January 1	Mil. 132.6	Mil. 170.8	Mil. 148.0
Supply of all concentrates per animal unit	Tons 1.03	Tons .97	Tons 1.06

¹ Preliminary—subject to change as more data become available.

² Stocks of corn Oct. 1, oats July 1, barley June 1, sorghum stocks not reported. Includes stocks on farms, at terminal markets, and in CCC bins.

LIVESTOCK

WAR Food Administration announced September 15 that the previous support price for hogs of

\$12.50, Chicago basis, for the period October 1, 1944, to March 31, 1945 would continue until June 30, 1945. There will be no change in the ceiling price for live hogs prior to June 30, 1945. Ceiling prices are on the basis of \$14.75 at Chicago for hogs weighing up to 240 pounds and \$14.00 for hogs over that weight.

Number of cattle in feed lots in the midsummer was much smaller than a year earlier and the smallest in 7 years. However, shipments to feeding areas have been larger during the summer than a year earlier, with the number of cattle to be fed this fall and winter indicated to be a record or near record. In the Western Corn Belt, the principal cattle feeding area, where crop yields and pastures are very good, larger numbers probably will be fed than a year ago.

Supplies of well finished beef will remain relatively small in relation to the strong demand for it throughout the remainder of the year at least. Even with an increase in cattle feeding, and a continuation of the feeding of cattle for shorter-than-usual periods, marketings of fed cattle will not materially increase in volume until late winter and early spring.

DAIRY PRODUCTS

FROM October 1 until flush milk production next spring, butter manufacturers will not be required to set aside any butter for sale to Government agencies.

Butter production during the first 8 months of 1944 was 12 percent below the corresponding period in 1943 and 9 percent below the 1935-39 pre-war average. With civilian cold storage stocks of butter on October 1 about half the 1939-43 average and with production probably continuing at a low ebb, per capita civilian consumption in the last quarter of 1944 will be at the lowest levels for over a half century.

Total milk production on farms for the first 9 months of 1944 was 93.0 billion pounds compared with 93.2 billion for the same period in 1943.

Supplemental dairy production payments for drought relief have been designated in areas in 25 States. Winter rates for the dairy production payments, together with the supplemental payments for drought areas, will range from 60 to 90 cents per hundred-weight for milk and 10 to 11 cents per pound for butterfat. These winter rates will help dairymen meet higher feed costs and will result in more favorable milk-feed and butterfat-feed price ratios than last year. Thus smaller declines from peak milk production than last year are expected.

TOBACCO

IMPROVED weather during late August and September greatly enhanced the tobacco outlook from both the immediate and the longer-range viewpoints. Production in 1944 is equal to disappearance for the first time in several years. Stocks are somewhat below normal in relation to demand, but with the large 1944 crop (now placed at 1,805 million pounds), the indicated supply is about the same as a year ago, with no further reduction of stocks for domestic use anticipated.

Domestic consumption of tobacco is expected to continue near the present high level for at least another year, and exports are likely to increase somewhat over 1943-44. Governments of the liberated countries own outright a considerable quantity of tobacco stored in this country, and as soon as conditions permit, this tobacco is likely to be exported. Furthermore, European stocks are low and since tobacco is a major source of revenue, financial arrangements are expected to be made to purchase additional quantities.

Demand for flue-cured tobacco, the only type now being sold by farmers,

continues strong, with prices paid growers above the high level of last year.

In view of the high level of domestic consumption and the improved outlook for exports, it appears that larger acreages of most types of tobacco could be grown in 1945 and sold at profitable prices.

VEGETABLES

PRODUCTION of commercial crops for fresh market shipment in 1944 will be the largest on record, probably exceeding the previous high of 1942 by approximately 11 percent, according to estimates based on October 1 condition.

Although the index of truck crop prices for fresh market was lower during most of the first part of 1944 than in 1943, they averaged about 44 percent higher for the first 9 months of 1944 than for the same period in 1942. For the remainder of 1944 it is probable that the truck crop price index will tend to approximate the 1943 level, which would be about one-tenth higher than for the same period of 1942.

Production of commercial truck crops for processing, according to October 1 condition, will be around 9 percent larger than in 1943 but about 5 percent smaller than the record crop of 1942.

Potato production in the intermediate producing States is the smallest on record, with prices received by farmers on September 15 the highest for this month since 1920. The October 1 estimate for the 30 late States of 303 million bushels is the second largest late crop since 1935. But if non-civilian requirements continue as high as are now indicated, the per capita supply of potatoes for fresh consumption for the 1944-45 season will be somewhat below the pre-war 1935-39 rate of consumption.

The sweetpotato crop, estimated at around 73 million bushels on October

1, is about 9 percent larger than the 10-year (1933-42) average.

This year's dry edible bean crop is now expected to be about 19 percent less than the 1943 crop but about one-eighth larger than average. The dry field pea crop is also estimated to be smaller than last year's crop by about 18 percent, however, it is nearly three times as large as the 10-year (1933-42) average production.

FRUIT

PLENTIFUL supplies of fresh deciduous and citrus fruits plus sustained high consumer demand characterize the 1944-45 fruit season.

Aggregate tonnage of the eight major deciduous fruits is indicated to be about one-fifth larger this year than last. Of the deciduous fruits marketed in large volume at this time of year, the commercial apple crop is about two-fifths larger than the short crop last

year, pears about one-fifth larger, with grapes slightly smaller.

The 1944-45 crop of citrus fruit, which is just starting to move to market, is expected to be fully as large as the record large crop last season.

According to present estimates of total supplies and requirements, civilians will receive about one-fifth to one-fourth more of fresh deciduous fruits and canned fruit juices than last season, but slightly smaller quantities of canned and dried fruits.

Prices received by farmers for fruits at the beginning of the 1944-45 season generally were at record high levels, slightly higher than a year earlier and more than twice the 1935-39 average. They declined seasonally during late summer and early fall, mostly in reflection of increasing market supplies of deciduous fruits from this year's large crop. Seasonal increases in prices for deciduous fruits in late fall, after the conclusion of the harvest season, seem probable.

RELATIONSHIP BETWEEN NET FARM INCOME AND NUMBER OF PEOPLE UNEMPLOYED FOR THE PERIOD 1929-44 INCLUSIVE*



*FROM U.S.A. E. AND DEPARTMENT OF COMMERCE PUBLICATIONS. DATA FOR 1944 ESTIMATED BY THESE AGENCIES

U.S. DEPARTMENT OF AGRICULTURE

REG. 43815 BUREAU OF AGRICULTURAL ECONOMICS

Penicillin Production and Agriculture

PENICILLIN is the name of the remarkable new drug so successful in the treatment of wounds and infectious diseases common to the war. It has already saved the lives of thousands of men and will save the lives of thousands more before the war is over. It has been called the outstanding medical development of this war and considered so valuable to the armed forces that until recently virtually all production has been requisitioned for military use. It is as important in its field as the sulfa drugs are in theirs, and the number of lives saved since their discovery a few years ago is well known.

The remarkable properties of penicillin are due to its ability to kill bacteria. In certain infections it kills the causative organisms, or stops their growth entirely, without harmful effect on the patient. It is not, however, a cure-all, since it is not effective against all types of infection.

Brings Immediate Relief

Among the diseases known to be routed by penicillin are osteomyelitis, pneumonia, gas gangrene, and gonorrhea. It cures certain types of infection against which the sulfa drugs fail. Penicillin is being used with great success in the treatment of infected wounds. One of the most dramatic effects of the drug is the almost immediate relief from pain that it affords.

Penicillin is administered externally, in the case of wounds or surface infections, or by injection, but is ineffective when taken by mouth. The amount required for a cure ranges from 100,000 to 150,000 units for gonorrhea to a million units or more for most other infections.

Although comparatively new, penicillin came into the limelight so fast most people already have heard about it. But the general public is not aware that the production of this new drug

is linked up with agriculture. Penicillin is produced by a mold that lives on a diet composed almost completely of agricultural products and gets its name from that mold: "penicillium notatum." This particular mold is just an ordinary green-colored micro-organism resembling the mold sometimes seen on bread, cheese, and other household products. The mold grows easily but does not yield worthwhile quantities of penicillin unless maintained under ideal conditions and fed on the proper diet. Producing penicillin is certainly not a household task. It's a laboratory job that must be done by trained scientists under carefully controlled conditions.

Discovered in 1929

The observations which led to the discovery of penicillin were made in 1929 by Alexander Fleming, a British scientist. Ten years later H. W. Florey of Oxford University produced enough penicillin to determine clinically that it was one of the greatest microbe destroyers ever encountered, but the yield of the drug was so low its production on a commercial scale was simply out of the question. The great need for this drug in the war caused British scientists to bring the penicillin problem to the United States during the summer of 1941 in the hope that our method of doing things on a big scale might be applied to the production of penicillin. And it was.

Soon after their arrival in America, the British scientists were sent to the Bureau of Agricultural and Industrial Chemistry's Northern Regional Research Laboratory at Peoria, Ill., which has one of the largest collections of industrially important micro-organisms in the world and a research group with years of experience in the field of industrial mold fermentations. The upshot was that important discoveries were made from the research program set up to study the penicillin production problem.

Scientists in the Peoria Laboratory set out first to increase the yield of penicillin in the hope of getting commercial production started as soon as possible. The mold was fed on a new diet made from the steeping liquor obtained in the production of corn starch by the wet-milling process. There are large quantities of this liquor commercially available at a low price. Some of it is used in making yeast, but because there is little or no other use for it, most of it goes into cattle feed. The scientists found also that the mold preferred, in addition to the corn steep liquor, some lactose, the sugar present in cow's milk—another agricultural product. This new diet, and improved growing conditions, plus the use of better strains of molds increased the yield of penicillin more than 100 times and in a comparatively short time. This made it possible for industry to take over and start production on a commercial scale.

Two Mold Methods Used

There are two main methods used in the production of penicillin—the surface method and the deep-tank method. In the surface method the mold is grown in shallow pans or even 2-quart size milk bottles, stacked side by side and on top of each other. In this method the mold simply floats on top of the solution.

In the deep-tank or submerged method the mold is grown in large tanks deep under the surface, and stirred with mechanical agitators while air is pumped in. Tanks in some of the commercial plants hold as much as 12,000 gallons. The surface method is the one used by the British scientists and the one that was used at first in the experiments at the Peoria Laboratory. The deep-tank method is the outgrowth of the deep-tank fermentation research pioneered by Department scientists for more than 15 years. Most of the penicillin being produced today is made by the deep-tank or submerged method.

Based on the improved fermentation methods developed at the Peoria Laboratory, the commercial production of penicillin is now under way in 21 chemical and pharmaceutical plants in the United States and Canada. These plants have been rushed to completion and represent an investment of more than \$20,000,000. Owing to its contributions and leadership in developing the fermentation processes, assay techniques, and procedures in isolating and purifying the drug, the Northern Laboratory has become a sort of clearing house for consultations and instructions in the manufacture of penicillin.

Consulting services have also been furnished to scientists of the other Allied Nations. Visits have been exchanged with English workers, and the art of making penicillin has been taught to Canadians, Australians, Chinese and Brazilians. One Australian Army officer, after spending some time at the Northern Laboratory, was producing penicillin in quantity within 7 weeks after he returned to his own country. Part of this penicillin is said to have been made available to our troops in the Southwest Pacific on a reverse Lend-Lease basis.

Output Million Times Greater

The penicillin production record speaks for itself. During all of 1942, production probably did not exceed 100 million Oxford units—an arbitrary standard for measuring the germ-killing powers of a penicillin preparation. Production during the first 5 months of 1943 amounted to slightly more than 400 million units while an equal amount was produced in the following single month of June. After that, production nearly doubled each month and climbed to 9 billion units in December of '43, 12 billion in January of '44, 19 billion in February, and 40 billion in March.

Production by the end of this year should be around 200 billion units a month, which is enough to treat about 250,000 serious cases of infection. At

present the amount of penicillin available for civilian use depends on how much is required by the armed forces. They get first call. But production is increasing at a rapid rate and more penicillin is being allocated for civilian use every day . . . in fact, 2,100 hospitals are now receiving it. The price has dropped from \$20 per hundred thousand units to \$3.25, a reduction of 84 percent in a year, and it will undoubtedly go lower as production increases.

The basic fermentation process developed at the Northern Laboratory is being used by all but two of the present commercial producers of penicillin. This process, based on the use of corn steep liquor and milk sugar, has paved the way for large-scale commercial production. There is plenty of corn steep liquor, but it has been necessary to more than double the output of milk sugar to meet the

demand for this product due to its wide use in the production of penicillin.

The commercial production of penicillin represents an entirely new industry based on agricultural products that was not even in existence 2 years ago. It involves a new source of annual income of more than \$50,000,000, some of which will indirectly find its way back to the farm. This monetary evaluation is in addition to the immeasurable value of the research which led to the commercial production of this remarkable drug and the part it is playing in saving human lives. It is one of agriculture's outstanding contributions to the war and a development that will live to benefit humanity long after the world is at peace.

O. E. MAY, Bureau of Agricultural and Industrial Chemistry, ARA

Post-War Outlook for Wheat

THE WAR increased the use of United States wheat tremendously—from an average of 720 million bushels during the 10 years 1932-41 to nearly 1,300 million bushels in 1943-44. This increase reflected vast quantities used for feed and industrial alcohol in addition to a moderate increase in food use. With a production in 1943 considerably below the large consumption in that year, carry-over stocks were reduced from about 600 million bushels July 1, 1943, to about half that quantity a year later, and in addition over 125 million bushels were imported. The large crop in 1944, however, is expected to cover a continued large consumption without further reducing the carry-over on July 1, 1945.

If the announced acreage goal is achieved in 1945 and yields are average, a crop of about 850 million bushels would be obtained. The size of the wheat disappearance in 1945-46 will

depend to a great extent on the progress of the war, but a crop of this size together with a limited reduction in carry-over would be expected to cover requirements.

Adequate 1946 Carry-Over

Carry-over stocks July 1, 1946, may be reduced to between 250 and 300 million bushels. A carry-over of this size, however, would still be large enough to provide a sizable reserve against a year of small yields, which may be expected as yields since 1939 have been above average. From the foregoing it appears that when the war terminates the United States may have a carry-over greatly reduced from the 632 million bushels in 1942, but at the same time large enough to provide a reserve for small yields in addition to necessary operating stocks.

Post-war domestic requirements for United States wheat will depend considerably on the quantity of wheat

fed or used for industrial purposes. Before the war when total disappearance for domestic uses averaged about 675 million bushels annually, about 115 million bushels were used for animal feed, most of which was fed on farms where grown. This could be increased under a program which proved a cheaper price for wheat used for feed than for food. Before the war the quantity of wheat used for industrial purposes was negligible, but after the war significant quantities may be so used.

Trade Policies Affect Exports

The export outlook involves two important aspects. One of these has to do with the volume of international trade in wheat and the other with the price of wheat in the United States as compared with the export price in other countries. International trade prospects will depend on many things, among which are adjustments in trade restrictions and general trade policy among importing nations. In the twenties before European countries drastically restricted their wheat imports, world trade and the United States exports were very much larger than in the following years. Our share of total exports will depend largely on the method adopted to meet competitive prices in other countries.

Income from wheat sales in 1943 was over 900 million dollars, and for 1944 is expected to be fully a third larger and the highest since 1920. The large income in 1943 chiefly reflected good prices; that of 1944 is the result of large production as well. Prices in these two years are double the average for 1931-40.

The Agricultural Adjustment Act of 1938 as amended by the Stabilization Act approved October 2, 1942, provides price-support loans to cooperating farmers at 90 percent of parity on wheat harvested before the expiration of the 2-year period beginning the first of January following the official proclamation that hostilities have ceased. Such loans would serve to maintain

income to wheat growers in the years immediately following the war.

Largest World Stocks

World stocks of wheat in the present war have been very large in contrast with supplies in World War I. Supplies in the four principal exporting countries on July 1, 1943, which in the 1930-39 period represented 80 percent of the total July world stocks excluding Soviet Russia and China, totaled 1,750 million bushels—an all-time record high. On July 1, 1944, they were down to about 1,170 million bushels and on July 1, 1945, they may be moderately lower. However, such stocks would still be greatly above the 1935-39 average of 457 million bushels.

The reduction in July 1 stocks in the four countries, amounting to about 580 million bushels, is the greatest single-year change on record. It results in part from the smaller 1943 wheat harvests in the four countries and in part from the extraordinary demand for wheat for nonfood purposes. Virtually all of the decline occurred in North America—300 million bushels in the United States and 200 million in Canada. Some reduction has taken place in Argentina's stocks, but they are still near the record level of 1943. A moderate decrease is indicated for Australia as a result of the small 1943 harvest.

Of the total stocks in the four countries of 1,140 million bushels, about 700 million bushels may be considered available for export during 1944-45. However, little if any of this supply may be needed. Unless abnormally large shipments are required by Europe during the year, the surplus in prospect from the 1944 production in the four countries should go far toward meeting world import requirements. Accordingly total carry-over stocks and their indicated surplus position on July 1, 1945, would not differ greatly from the July 1 position in 1944.

ROBERT E. POST
Bureau of Agricultural Economics

Farm Land Market After the War

THE YEAR or two following the cessation of hostilities in Europe is likely to be the critical period of the World War II farm real estate market. During this time the land value inflationary pressures will probably reach their greatest strength and by the end of the period should be receding.

In case a high degree of optimism and enthusiasm develops, all conditions essential for a full fledged land boom are likely to be present shortly after the end of the European War. This will be particularly the case if high farm income levels continue, as the result of Government price support programs, a high domestic demand, and the meeting of foreign relief needs.

Demand Becoming Stronger

In addition to high farm incomes, there will be a large and possibly growing volume of purchasing power in the hands of prospective buyers. Keen competition for loans among lenders and increased equities available for use as security indicate the potentialities for a greatly expanded use of credit to finance the sale of farms. With high rates of current returns on land, almost record low interest rates and limited alternative investment opportunities, the purchase of farm land will be attractive to others as well as farmers.

A number of stimulating influences connected with demobilization will be added to the above forces that are already operating. With the return of servicemen and war workers in increasing numbers, the demand for farms will expand. As supplies of labor, machinery, fuel, fertilizer, and other materials are increased and various wartime obstacles to production alleviated, purchases by both farmers and investors may be greater. The incentives for investing current savings or even maintaining accumulated savings in non-inflationary types of investments will be reduced.

At the same time, a supply of farms

sufficient to meet the probable demand is likely to be available only at rather sharply increased prices. The most readily available sources of supply are rapidly being depleted. Outside of a few areas, creditor agency holdings have largely been liquidated and are no longer a significant factor in the market. It is also probable that the bulk of the estates where settlement was postponed because of low land prices have now been sold, and the future supply from this source will be limited largely to those currently created.

Inflated Values But No Boom

Many more farmers have been selling to retire because of the advance in values the last few years. Sales by farmers in 1943 were more than double the number in 1940. There will still be a large number of owner operators of retirement age with sufficient financial resources to retire following the war but unless land prices are high, sales by this group may be limited. Some may turn their farms over to children, others with reduced production difficulties may continue to operate, while many may rent rather than sell. As long as current returns on land are higher than on most other investments available to land owners, farmers and landlords are not likely to sell except at their own price. It would appear probable that the land market for some time following the war would continue to be essentially a seller's market, characterized by many buyers competing for a limited supply of offerings.

This rather imposing array of powerful stimulating forces may push values to inflated levels in many areas, yet a full blown land boom such as followed World War I may not develop because of the absence of a greater degree of confidence and optimism in future land values than currently prevails. More cautious attitudes than those of a quarter of a

century ago should prevent the market from reaching the runaway boom stage, characterized by frequent resales, intensive speculative activity, sales at prices bearing little relation to even high current earnings, and generally optimistic expectations.

A number of forces will operate in the direction of replacing attitudes of restraint still prevailing by those definitely more optimistic. Many characteristics of the current land market are such as to generate a bullish outlook. In addition, a number of expectations already influencing many buyers could become more widespread and further undermine cautious attitudes. Some expect that: (1) the Government will continue price support programs in the longer post-war era and prevent serious declines in farm prices; (2) that lower interest rates are here to stay and hence lower capitalization rates and higher land values are justified; (3) that the world food needs for rehabilitation and adequate dietary standards are such as to require a high level of production; (4) that a

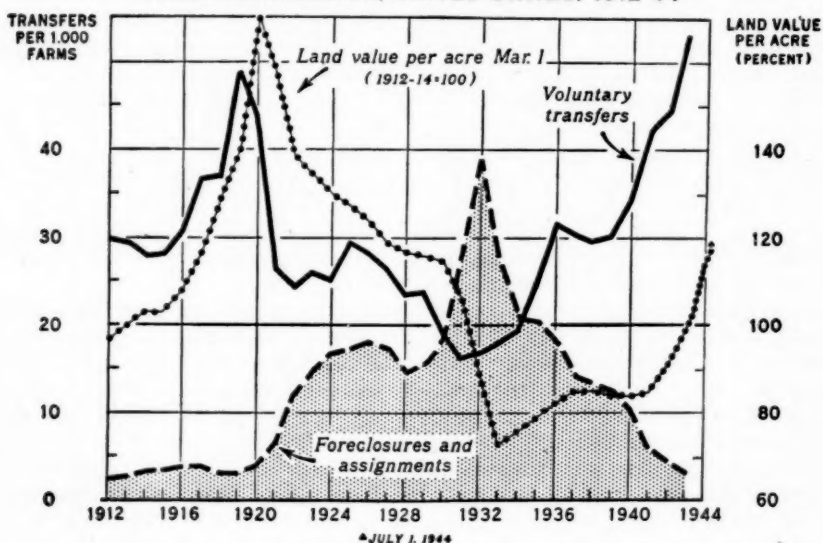
condition of full employment will sustain higher value levels than those now prevailing; and (5) that an inflated general price level after the war is probable, because it cannot be avoided or because it may be necessary in order to service the national debt.

Many of these are reminiscent of types of expectations that prevailed during the land boom of World War I, while others are new. Of these views, the expectation of a substantial degree of monetary inflation following the war is the one having the greatest possibilities for seriously breaching restrained value attitudes. Such an expectation might lead to widespread buying as an inflation hedge in the belief that money rents and values will rise with the general price level.

Many Remember 1921 Crash

Operating in the direction of maintaining reasonably cautious attitudes and a guarded outlook on land values will be a number of rather widely held opinions and beliefs that appear thus far to be fairly well entrenched. The recollection of the last land boom and

VOLUME OF FORECLOSURES AND ASSIGNMENTS, VOLUNTARY TRANSFERS, AND INDEX NUMBERS OF VALUE PER ACRE OF FARM REAL ESTATE, UNITED STATES, 1912-44



its disastrous consequences has made both buyers and lenders wary of wartime farm product and land prices. Departures of current land prices from long term earning capacity values are recognized and the danger of going heavily into debt to buy land at present prices is appreciated by many. Most potential buyers, particularly farmers, are still acutely aware of the serious agricultural surplus problems prevailing before the war and with an expanded productive capacity expect their reappearance shortly after the end of hostilities. A recent survey in the Corn Belt indicates that a substantial majority of farmers believe that land values are already at or beyond levels that will allow a farm to pay out; that in case of purchase very heavy down payments should be made; that land prices will fall after the war; and that the present is a poorer time than later to buy a farm.

With prevailing land prices already considered above normal levels in many areas, conservative beliefs may become more firmly held as the end of the war approaches and the limited number of remaining high income years taken into account. In case farm product prices in the immediate post-war period are dependent largely on war-connected Government support programs, such views may be further strengthened. Educational and informational programs of Federal and State agencies are encouraging the continuation of cautious attitudes.

Cautious View Still Dominates

The activities of those holding optimistic views may be sufficient to cause continuing value increases for some time following the war, although the land market is not likely to go on a rampage as long as the majority of farmers continue to hold present cautious attitudes. However, the stability of such conservative views remains to be proven. They might change rather quickly should: (1) agricultural commodity prices press on ceilings rather than floors for a year or more

following the war, or even appear capable of being sustained by competitive conditions; (2) should the general price level exhibit serious inflationary tendencies; and (3) should buying as an inflation hedge and speculative activity increase in volume.

Developments in the land market up to the fall of 1944 indicate that the attitudes of conservatism have gradually been yielding ground. Many buyers are again over-emphasizing wartime income levels and land values in many areas have already risen above levels likely to be sustained at substantially lower farm commodity price levels. The volume of sales and resales are at high levels. Heavy debts are being contracted to purchase farms in a significant number of sales.

May Escape Runaway Boom

But despite the strong inflationary pressures operating, the conservative views are still having an influence, and probably are chiefly responsible for having thus far prevented a runaway land market. A slowing down in the volume of sales during the past summer may indicate a tempering in the demand for land and reflect the continued prevalence of conservative views. Whether this is a lull before the storm, or evidence that the crest is here, is not likely to be apparent for some time. At least momentarily the possibilities of escaping a serious land boom appear more hopeful than for some time. However, because of the obvious strength of stimulating forces operating and the possible instability of the restraining influences, the threat of a land boom will continue until the transition to peace conditions nears completion and economic visibility becomes clearer. Even though another major land boom is avoided during this period, the widespread development of varying degrees of an inflated value condition in the land market would still have serious consequences in the longer post-war era.

MARK M. REGAN

Bureau of Agricultural Economics

Nutritive Value of Cottonseed Protein

WARTIME requirements for increased supply of protein foods early focused attention on the use for human consumption of plant proteins of superior nutritive quality. Post-war relief and rehabilitation of the people of subjugated countries present a continuing food problem. One of the important shortages is, and will be for some time, that of protein foods. As a means for meeting this situation attention has been directed to a greater use of the more abundant plant proteins to spare or extend the more scarce proteins of animal origin, such as meat and milk.

As a source of plant protein, cottonseed merits particular attention because of its abundance and nutritive value. Cottonseed meal, the ground residue remaining after removal of the oil from cottonseed, has been long recognized and extensively used by feeders of farm animals as a protein concentrate of high nutritive value.

Cottonseed Flour on Market

There is now available a partially defatted, wholesome, and palatable cottonseed flour specially prepared for human use. Large quantities of this flour have been shipped overseas for lend-lease use. Its high protein content of 50 percent is exceeded by only a few other foods. The digestibility of cottonseed globulin, which represents the greater part of the seed protein is nearly equal to casein of milk. The total protein of cottonseed flour is as digestible as peas and beans, 80 percent as digestible as meat, and 90 percent as cereals.

The nutritive value of a protein depends primarily on its amino acid composition. Most proteins are composed of about two dozen different amino acids combined in a variety of ways. When we eat proteins we are eating amino acids. Eight of these amino acids are nutritionally essential factors. As with the vitamins, if

only one of the amino acids is lacking or deficient in the diet, satisfactory health and nutrition cannot be maintained.

The protein of cottonseed flour is a good source of the nutritionally essential amino acids. It has a growth-promoting value approximately four and a half times that of wheat flour. It is well suited to supplement the proteins of certain other foods, particularly those of the cereal grains. It is estimated that about 36 percent of the protein used for human consumption in the United States is furnished by cereal grains, chiefly wheat. Wheat flour is known to be deficient in some of the essential amino acids abundant in cottonseed flour. Addition of as little as 5 parts of cottonseed flour to 95 parts of wheat flour produces a mixture containing 16 percent more protein than wheat flour alone, and a protein combination definitely superior in its growth-promoting value to the same quantity of protein from wheat flour.

Use of cottonseed flour offers an effective, economical, and practical way of helping to meet a shortage of protein food for relief in foreign lands. Furthermore, because of its value as a protein supplement, a more extended domestic use of cottonseed flour would raise the nutritional level of the diet of people living in areas where cereals, particularly corn, constitute a major source of protein in the diet. It can be used for food in a variety of ways.

D. BREESE JONES, *Bureau of Human Nutrition and Home Economics, ARA*

Farm Production, Farm Disposition, and Value of Oats, 1909-41, by States. Processed. 51 pp. Bureau of Agricultural Economics. Washington. July 1944.

Makes available such revisions in farm disposition statistics as have become necessary through revisions in the estimates of production to the census base.

Do Larger Farms Pay Higher Wages?

THAT larger or more productive farms within an area tend to pay higher wage rates than do the smaller ones is strongly suggested by the findings of a recent study of various aspects of farm wages.¹ Farms with the larger or more profitable operations can better afford to employ higher-grade workers and can outbid for the services of workers of equal capacity when the labor supply situation necessitates it. However, the wage differentials are not as great as are the differences between the larger and smaller units in net income or gross value of production.

Although average wage rates tend to be higher on larger farms than on smaller ones in the same area, there are sharp regional and area differences in the wage level among farms which have the same scale of operations, as measured by the gross value of production or by net farm income. Thus Southern farms in a given gross or net income class have much lower average wage rates than farms in the same income class in other major regions of the United States.

Skilled Workers' Wages Vary More

The supply of unskilled labor is usually much greater than the supply of labor for farm jobs requiring skill, experience, or responsibility. Hence the wage differentials on farms of different sizes tend to be greater for skilled work than for work requiring little skill or experience. Labor supply and other conditions may offset factors producing wage differentials on farms of different sizes in a particular area.

For example, under some conditions piece rates for a certain operation may be lower on the larger farms than the smaller. Yet higher yields or better cultivated fields or greater acreages

can result in higher total or daily earnings per worker at a lower piece rate than the earnings obtainable from a higher piece rate on some smaller farms. Or the supply of workers for certain jobs may be so ample that there would be little incentive for some farmers to pay higher wage rates. Other factors such as better housing or a greater amount of perquisites furnished may also operate to influence the cash wage rates and thereby minimize wage differentials among farms of different size. Also in the special situation where minimum or maximum farm wage rates are set by Government agencies, there is a tendency for wage differentials to be reduced or disappear.

When Larger Farms Pay More

One survey of farm wage rates made in New York, Nebraska, Colorado, Oregon, and North Carolina during 1942 showed that in each of these States the median wage rate per month with board on farms in the largest size class was higher than the wage rate for farms of all sizes. Acres in cropland was the only criterion of size of farm used in this study and the data were too limited to permit examination of variation in wage rates among the different types of farms within the same size class.

In New York State, where the farms surveyed were predominantly dairy, there was the closest positive correlation between the monthly wage rates (with and without board) and size of farm. During June 1942, the median wage per month with board on New York farms with 200 or more acres of cropland was 32 percent above the median wage for farms with less than 50 acres. In the other States the rise in average wage rates on farms with successively larger acreages showed some irregularities. Undoubtedly type-of-farm differences tend to obscure the relationship of the level of wage rates

¹ *Wages of Agricultural Labor in the United States*, Bureau of Agricultural Economics, September 1944

with the size of enterprise when comparisons are possible only on a crop-acre basis.

The same survey provided information on day rates with and without board paid on farms of different sizes in Arkansas and North Carolina in June 1942. No clear trend is apparent in the case of Arkansas. Although the trend is somewhat irregular in North Carolina, there is a suggestion of a negative correlation of the day rates with size of farm. This may be partly due to the inadequacy of crop acres as a measure of size of enterprise for comparisons involving, as in the case of North Carolina, cotton and tobacco farms where a given cropland acreage may mean quite different scales of operation. Other factors may be the presence on larger farms of other inducements to workers, such as employment for somewhat longer periods, better field conditions making the work easier, and possibly such conditions as the workers' preference for working in groups, and some perquisites.

In Arkansas, the day rates in June were heavily weighted by payments to the most unskilled class of workers—the hoe hands, cotton choppers, etc. With an abundant supply of such labor in the South, there was no necessity for one group of farmers to pay more than another group for workers to do this kind of work. Consequently no marked differences appeared in the median wage rates for farms of different size.

Because day rates are generally paid to seasonal workers and monthly rates principally to the permanent and more skilled group of workers, the greater wage differentials on farms of different size in the case of monthly wage rates reflect the more limited supply of regular than of seasonal workers.

Higher Wages for Same Work

The clearest example of the tendency of larger farms to pay higher wage rates was provided by a survey of dairy farms in the Los Angeles milkshed. Wage rates in this area of

intense competition for workers were probably among the highest in the country. In the fall of 1942 average monthly wage rates for two types of dairy workers in the dry-lot area of Los Angeles County were as follows:

Monthly Wage Rate

Size of dairy	Hand milker and stripper	Ma- chine milker
All sizes.....	\$179	\$209
Less than 50 cows.....	130	130
50-99 cows.....	171	202
100-199 cows.....	181	204
200 or more cows.....	204	215

These figures indicate that even within a given area and type of farm, wage rates for the same type of work were higher on the larger farms. Such a spread in wage rates for the same type of work was in part due to the wartime conditions of labor scarcity in the Los Angeles milkshed area and the practice of "bidding up" among dairymen for the experienced workers available. In October 1941, the rate for hand milkers on the largest dairies (200 or more cows) in the dry-lot area of Los Angeles County was only \$10 or 7 percent more than the average of \$137 for all farms, while in October 1942 it was \$25 or 14 percent above the average.

Average Wages Generally Higher

The average wage rates for all types of workers and modes of payment during 1939 were apparently higher on larger farms than on smaller farms. Estimates developed from Census data for farms classified by total value of products indicate that this relationship existed in each major geographic division of the country.

Census data on cash wage expenditures and on employment of hired workers on farms in the different value-of-products classes permitted estimates of the average annual wages per worker (assuming 12 months employment) for farms classified into 13 groups according to value of products sold, traded, or used by farm

households in 1939. The wage cost per worker as estimated represents the amount of wages which would have been paid to a worker had he been employed for 12 months at the average rates actually paid on farms of a given value group. On the great majority of farms, however, considerably less than one man-year of hired labor was used.

For the United States as a whole the estimated cash wage per man-year of hired labor was only \$154 on farms with value of products of less than \$1,000 as compared with \$327 on farms with value of products ranging from \$1,000 to \$10,000 per farm, and \$583 on farms of \$10,000 or more. On the farms with value of products between \$1,000 and \$10,000 there was a gradation in the wage cost per man-year of hired labor from \$256 in the \$1,000-\$2,500 group to \$454 in the \$6,000-\$10,000 group.

Wide Regional Differences

Similar estimates for the South Atlantic States showed a gradation in annual cash wage cost per hired worker

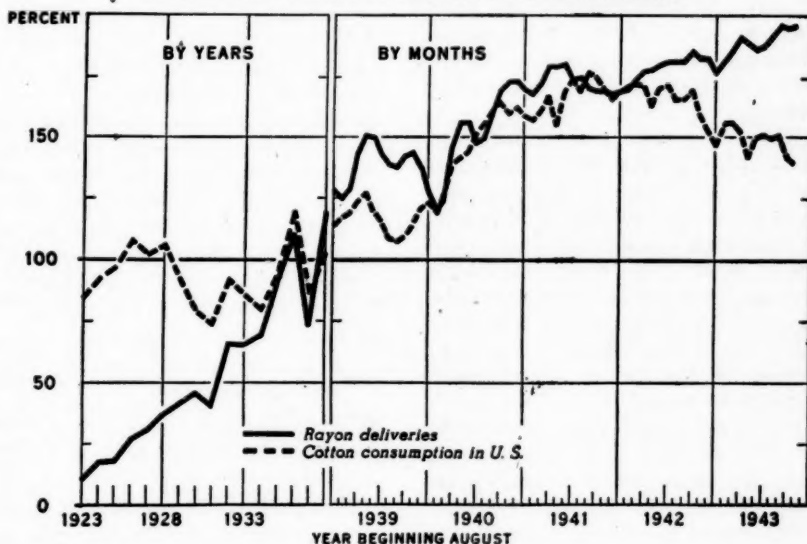
from \$177 in the \$1,000-\$2,500 group to \$404 in the over \$10,000 group. For the Pacific States, the corresponding figures were \$433 and \$868. These differentials among value groups of farms in wage costs per hired worker may reflect other factors besides differences in wage rates for the same type of work. For example, farms with higher average production may employ greater amounts of the types of labor which are generally paid at higher rates. Nevertheless, the differentials are so large as to afford strong supporting evidence that higher average wage rates are paid on the larger farms for a given type of work.

Wages Differ Less than Incomes

These differentials in wages among farms of different size of enterprise were matched by even greater differences in farmers' ability to pay wages. Estimates presented in the same study indicate that in 1939 the United States average net income from farming available for family living was \$8,690 for farms with a value of products of \$10,000 and over. This was 16 times as

COTTON CONSUMPTION AND RAYON DELIVERIES, 1923-43

INDEX NUMBERS (1935-39=100) ADJUSTED FOR SEASONAL VARIATION



great as the average net farm income of \$537 for farms with a value of products of \$1,000-\$1,500. The estimated average total wage cost per man-year of hired labor was \$240 on farms in the \$1,000-\$1,500 net-farm-income class and \$595 on farms in the \$10,000-and-over class—only $2\frac{1}{2}$ times as much. In the South the average net farm income for farms in these value classes rose from \$670 to \$8,000, and the average wages per man-year of hired labor increased from \$240 to \$392.

The influence on the wage rate level of other factors besides the net income from farming operations is indicated by the marked regional differences in the annual wages per worker on farms at

similar net income levels. Thus, for example, farms in the West with a value of products of \$6,000 to \$10,000 realized a net farm income in 1939 averaging only 10 percent more than the net for farms in the South in the same size class. But the average wage cost per man-year of hired labor on these Western farms was over 100 percent more than on the Southern farms. Differences in the supply of available labor, in the types of labor used, in the availability of nonfarm employment opportunities, and in the level of non-agricultural wage rates are some of the factors producing these regional differences in the level of farm wage rates.

LOUIS J. DUCOFF

Bureau of Agricultural Economics

What Do Farmers Expect After the War?

WHEN the shooting stops do farmers expect a depression? How many veterans and war workers do farmers think will return to their own farm communities to live? Do they want price controls and price supports on farm commodities continued? What purchases are they planning to make when wartime shortages are over? And what are they thinking about international relations?

Answers to these and similar questions will be extremely useful in planning peacetime agricultural programs. In an attempt to find out what farmers are thinking about when peace comes, the Bureau of Agricultural Economics recently discussed such questions with 613 farmers in 32 widely scattered counties, broadly representative of the major farming areas of the country. Two-thirds of the heads of rural households interviewed were farm owners, and one-third were tenants and hired workers.

Highlights of the opinions of the farmers interviewed show that:

- Practically all of them expect a depression eventually, but a majority are optimistic about the immediate post-war years.
- A large majority want a continuation of price controls and price supports for at least 2 years after the war.
- A majority definitely expect to make major purchases when wartime shortages are over.
- Most now think that a large proportion of farm-experienced veterans who return to their local farm communities will be able to make a living, if not much money. Nearly all think the Government should help veterans get farms if they want them, or other work.
- A large majority want the school and health services in their communities expanded.
- Three-fourths think the United States should participate in a world association of nations.

Two in three of the farmers interviewed think there will not be a depression during the first 3 years after

the war—and half of these think the country is in for more of a business boom than now. They believe that the need for food by the devastated countries of Europe will maintain the present high demand for agricultural products for at least 2 years after the war. The third of the farmers who expect an immediate depression are largely of the lower-income group, frequently tenants and farm laborers. Farmers over 45 years old are more inclined to expect an immediate depression than are those who are younger.

As to be expected, the hopes of about all the farmers center around a single wish—a continuation of wartime farm prosperity without war. They want present high farm incomes to continue or go higher with expenses, including farm wages, remaining about the same.

Government Activity

When asked about Government activities in general, two farmers in five say that they should remain about the same as they are now after the war; one in five say they should be expanded; less than one in three think that they should be reduced. The Southeast has the highest proportion of farmers who think Government activities should be expanded; the Northeast and West Coast have the most who think it should be reduced.

While a majority of farmers do not want a sharp reduction in Government activities after the war, it is significant that in no area and among no group did nearly as large a proportion advocate an expansion of Government activities in general as advocate such specific measures as helping soldiers acquire land or guaranteeing floor prices for farm products. But many report that when farmers do not see how else to get things done, they look to the Government for action.

Commented one substantial farm owner and leader of the Northern Plains: "Government activity after the war should be the same as now if the need remains the same. If conditions are like they were during the

depression we'll probably need a lot more Government, but if prosperity continues we may need less."

Prices and Purchases

Nearly all of the farmers want the Government to continue price supports for 2 years after the war, and a substantial majority want a continuation of price ceilings for like period. "A thing out of control ain't worth nothing," said a Mississippi sharecropper in explaining why he favored continued controls.

Greatest opposition to the continuation of price controls came from the vegetable-growing areas on the West Coast and the upper Atlantic Seaboard where "the law of supply and demand" was most often mentioned by the farmers interviewed. "Just turn prices loose and let supply and demand work them out, anything else is artificial" was a typical comment from the minority who opposed a continuation of price controls after the war.

Three farmers in five report they are definitely planning to make one or more major purchases when wartime shortages are over. One in four plans to buy a tractor or other farm machinery; one in five plans to buy an auto or truck. Next in importance come household furnishings, installation of electrical current and equipment, purchase of farm lands, improvement of farm dwellings and other buildings.

Purchases now planned clearly reflect the farmers' desire to raise their standard of living in addition to making needed repairs and replacements.

More farmers in the Western and Northern parts of the country than in the Eastern and Southern plan purchases as do more of those with high incomes than low.

The families not planning major purchases can be divided into two general groups: (1) those who were most completely equipped with farm machinery and household conveniences when war broke out, and (2) those with such low incomes they have accumulated no

surplus because their increased wartime earnings have been used for current living expenses.

School and Health Services

Over four in five of the farmers interviewed want an increase of public health clinics, and more than three in four would like to participate in some sort of a flat-rate payment plan to cover doctor, nursing and hospital costs. Reasons given for their interest in such medical plans seemed to be twofold: (1) a growing desire for more adequate medical care than they have been able to obtain in the past; (2) the fear of continued thinning out of doctors in rural areas and small towns which would make medical care less available and more expensive.

A majority of the farmers favor the further consolidation of rural schools though consolidation is still a controversial issue in some areas. Four in five think schools should serve hot lunches after the war, and two in three want the wartime school repair shops continued so farmers can repair their own machinery. Over half think that school systems should continue to maintain centrally located canneries for the convenience of farm families, as some schools are now doing.

Old-Age Security

When farmers were asked to compare their own worries about being able to support themselves in old age with those of their fathers, the answers show that a larger proportion of non-owners than owners are worrying more. Over half of the farmers in the relatively low-income cotton South region answer "worry more" as compared with less than one-fourth in the higher-income Northern Plains and Pacific Coast areas.

Farmers in low-income areas are more optimistic about their children making a decent living on the farm than they are about their own security in old age. The reverse is true of farmers in high-income areas, where

farmers worry more about the future of their children on the farm and less about their own old-age.

Farms for Veterans

In the lower-farm-income areas of the country, where the largest proportion of farmers expect a depression and fewest expect a boom, is found the largest proportion of farmers who think that all veterans with farm experience could come back home and make a living, if not much money. Half of the farmers in the cotton Southeast make such a prediction compared with only one-fifth of those in the Corn Belt. Apparently this high estimate in low-income subsistence farming areas stems from the widespread belief that there is always a chance for anyone who cannot do better elsewhere to at least make something of a living on a farm. Quite high also are the estimates of the farmers in the areas where seasonal labor demands are highest, such as the vegetable-growing areas along the Atlantic Seaboard and Pacific Coast.

Most of the farmers think there will be work opportunities for all veterans who return to their home communities, but they are not certain the veterans will be satisfied with the work available as much of it in many areas will be for hired farm labor.

Nearly all of the farmers interviewed think the Government should help veterans get located in the kind of work they want. Nine in ten think the Government should help veterans from farm homes get located on a farm if they want to farm, and three in four think it should help them get off-farm work if they prefer that.

International Relations

Three farmers in four think the United States should participate in a world association of nations. Typical of the majority who favor U. S. participation in such an association is this comment: "We don't want to get into another war—there must be some way

to keep out of it." Some think we should participate in order to protect our own interests. Other representative comments are: "Try to get peace even if we have to sacrifice; we'll all be better off if we do it." "We as a Nation can't move along by ourself any more than a man can; we've got to help each other."

"To be fair about it," runs a typical comment of the minority who oppose participation, "it seems like the less we have to do with outsiders the better off we are."

Because of its complexities some farmers did not offer very definite opinions. Not infrequently a farmer would literally catch his breath and say something like, "now that's a hard one," or "that's too deep for me," or "the folks in Washington will have to decide that." Such reactions were particularly common among the lower-income farmers and those who had the least education and were the least read.

A Word of Caution

By way of emphasis, the reader is cautioned that the sample used in this study was small and therefore the findings can be relied upon only as rough indication of farmer thinking. Furthermore, opinions change quickly, especially in these troubled times, and so in fairness to the farmers interviewed their opinions recorded here can only be taken as a general indication of their thinking at the time of the interviews last spring and summer.

In contrast to some public opinion polls, the interviewers in this survey were usually well acquainted with the farmers they interviewed, having worked with them before on other projects. A large majority of the farmers expressed appreciation that Government representatives had come to the farms to find out from the farmers themselves what they are thinking.

ARTHUR RAPER and U. T. SUMMERS
Bureau of Agricultural Economics

SUGAR

THE CURRENT sugar shortage, particularly in the northeastern part of the United States where consumers are having difficulty obtaining sugar, is the result of a combination of circumstances.

Before the war, the United States imported about one million tons of sugar per year from the Philippines, about one-seventh of the country's annual consumption. This supply has been lost. Also, the domestic crop of sugar beets in 1943 and 1944 has been about one-third less than before the war, an annual loss equal to nearly 500,000 tons of raw sugar. The 1943-44 sugar crop of Puerto Rico was about 250,000 tons smaller than usual. These were major sources of United States sugar.

These losses have been made up during 1944 by increased imports from Cuba and a reduction in sugar inventories in this country. Receipts of sugar from Cuba during the first seven months of 1944 amounted to 2,237,320 tons as compared with 1,577,023 for the corresponding period in 1943.

Total stocks of sugar in the United States on July 31, 1944 were 999,832 tons, in contrast with 1,378,805 tons on July 31, 1943 and an average of 1,498,851 tons during the five pre-war years, 1935-39. Despite this, sugar distribution for consumption in the continental United States during the first seven months of 1944 totaled 3,914,606 tons, raw value. This is 11.7 percent larger than the distribution for the corresponding period of 1943 and almost equal to the record established in 1941.

Sugar supplies in the United States are likely to remain relatively short so long as (1) the Japanese control the Philippines and Java, (2) the sugar beet crops in the United States remain very much smaller than in pre-war years, (3) Europe's need for imported sugar is abnormally large, (4) the demand for sugar in the United States remains at its present high level.

Economic Trends Affecting Agriculture

Year and month	Industrial production (1935-39 = 100) ¹	Income of industrial workers (1935-39 = 100) ²	1910-14=100				Index of prices received by farmers (August 1909-July 1914=100)			
			Whole-sale prices of all commodities ³	Prices paid by farmers		Farm wage rates	Livestock and products			
				Com-modities	Com-modities interest and taxes		Dairy products	Poul-try and eggs	Meat ani-mals	All live-stock
1934.....	75	76	109	122	128	95	101	89	70	84
1935.....	87	86	117	125	129	103	114	116	116	115
1936.....	103	100	118	124	128	111	125	114	118	120
1937.....	113	117	126	131	133	126	130	110	132	127
1938.....	89	91	115	123	126	125	114	108	115	113
1939.....	109	105	113	121	124	123	110	95	112	108
1940.....	125	119	115	122	125	126	119	96	111	112
1941.....	162	169	127	131	132	154	139	121	146	140
1942.....	199	238	144	152	150	201	162	151	188	173
1943.....	239	305	151	167	162	264	193	190	209	200
1943-September.....	245	315	151	169	164	.....	195	201	208	203
October.....	247	317	150	170	165	280	198	212	204	204
November.....	247	318	150	171	166	.....	202	219	193	201
December.....	241	316	151	173	167	.....	203	212	194	200
1944-January.....	243	319	151	174	168	275	201	177	194	193
February.....	244	321	151	175	169	.....	201	168	199	194
March.....	241	318	152	175	169	.....	199	162	203	194
April.....	239	313	152	175	169	292	196	151	203	191
May.....	237	313	152	175	169	.....	194	153	201	190
June.....	235	313	152	176	170	.....	192	154	200	189
July.....	* 231	306	152	176	170	328	194	165	197	190
August.....	232	.....	152	176	170	.....	196	171	201	194
September.....	.....	.....	.....	176	170	.....	198	179	200	196

Year and month	Index of prices received by farmers (August 1909-July 1914=100)								Parity ratio	
	Crops							All crops and live-stock		
	Food grains	Feed grains and hay	Tobacco	Cotton	Oil bearing crops	Fruit	Truck crops			All crops
1934.....	91	95	159	97	95	88	95	98	90	70
1935.....	97	107	174	94	120	82	119	102	109	84
1936.....	108	102	165	95	112	92	104	107	114	89
1937.....	120	125	204	90	120	104	110	115	122	92
1938.....	75	71	176	67	88	70	88	80	97	77
1939.....	72	69	155	70	90	68	91	80	95	77
1940.....	84	82	136	77	96	73	111	88	100	80
1941.....	97	89	159	107	130	85	129	106	124	94
1942.....	120	111	252	149	172	114	163	142	159	106
1943.....	148	147	325	160	190	179	245	183	192	119
1943-September.....	150	156	315	163	199	205	180	182	193	118
October.....	157	158	335	164	201	195	187	183	194	118
November.....	160	158	347	156	202	196	228	187	194	117
December.....	166	165	349	160	202	208	223	192	196	117
1944-January.....	170	168	350	162	203	204	267	199	196	117
February.....	170	169	348	161	205	206	247	196	195	115
March.....	169	171	351	161	207	215	242	198	196	116
April.....	171	172	352	163	207	237	220	200	196	116
May.....	170	173	350	160	208	232	225	198	194	115
June.....	165	170	350	163	210	228	231	197	193	114
July.....	161	168	350	164	209	230	195	194	192	113
August.....	156	166	355	162	209	214	188	191	193	114
September.....	155	162	358	170	207	206	166	188	192	113

¹ Federal Reserve Board, adjusted for seasonal variation, revised November 1943.

² Total Income, adjusted for seasonal variation, revised March 1943.

³ Bureau of Labor Statistics.

⁴ Revised.

⁵ Ratio of prices received by farmers to prices paid, interest and taxes.

NOTE.—The index numbers of industrial production and of industrial workers' income, shown above, are not comparable in several respects. The production index includes only mining and manufacturing; the income index also includes transportation. The production index is intended to measure volume, whereas the income index is affected by wage rates as well as by time worked. There is usually a time lag between changes in volume of production and workers' income since output can be increased or decreased to some extent without much change in the number of workers.